

WHAT IS CLAIMED IS: (US)

1. A semiconductor device comprising:  
a conductive layer with a plurality of wires; and  
a bonding pad formed in a region overlapping with  
the plurality of wires of the conductive layer,

wherein:

one of the plurality of wires is connected to the  
bonding pad, and a protective film with an insulating  
property is formed between remaining ones of the plurality  
of wires and the bonding pad; and

the protective film formed on said remaining ones of  
the plurality of wires is bridged between adjacent ones of  
said remaining ones of the plurality of wires at least in a  
region overlapping with the bonding pad.

2. The semiconductor device as set forth in claim 1,  
wherein an insulating film is formed between the  
protective film and the bonding pad, so as to cover the  
protective film.

3. The semiconductor device as set forth in claim 2,  
wherein the insulating film is an oxide film formed by a  
chemical vapor deposition method.

4. The semiconductor device as set forth in claim 3,

wherein the oxide film contains at least one of boron and phosphor.

5. The semiconductor device as set forth in claim 1, wherein, in a region where the protective film is bridged, a minimum value S1 of wire distance between adjacent ones of said remaining ones of the plurality of wires, and/or a length L1 of a bridged portion of the protective film are adjusted to suppress scattering and spouting at a void formed by the bridging of the protective film.

6. The semiconductor device as set forth in claim 5, wherein the minimum value S1 of wire distance and/or the length L1 of the bridged portion are adjusted so that the minimum value S1 is not less than  $1.8\mu\text{m}$ , and the length L1 is not more than  $900\mu\text{m}$ , or the minimum value S1 of wire distance and/or the length L1 of the bridged portion are adjusted so that the minimum value S1 is within a range of from not less than  $1.2\mu\text{m}$  to less than  $1.8\mu\text{m}$ , and the length L1 is not more than  $1400\mu\text{m}$ .

7. The semiconductor device as set forth in claim 6, wherein the minimum value S1 of wire distance and/or the length L1 of the bridged portion are adjusted so that the minimum value S1 is not less than  $1.8\mu\text{m}$ , or the

length L1 of the bridged portion is not more than 400 $\mu$ m.

8. The semiconductor device as set forth in claim 5, wherein the minimum value S1 and/or the length L1 are adjusted in a region other than the region overlapping with the bonding pad.

9. The semiconductor device as set forth in claim 1, wherein the conductive layer comprises a second wiring layer that is formed on a semiconductor substrate having an active region where a semiconductor element is formed, and on a first wiring layer, via an interlayer insulating film, that is electrically connected to the active region, and

wherein the bonding pad is formed to overlap at least partially with the active region.

10. A fabrication process of a semiconductor device, comprising the steps of: ~

- forming a conductive layer on a substrate;
- forming an insulating film on the conductive layer;
- forming an opening through the insulating film; and
- forming a metal film on the insulating film and in the opening, so as to form a bonding pad,

wherein:

the step of forming a conductive layer includes a step of forming a plurality of wires;

the step of forming an insulating film on a conductive layer includes a step of forming a protective film having an insulating property; and

in the step of forming a protective film, the protective film is formed so that the protective film is bridged between adjacent ones of the wires at least in a region overlapping with the bonding pad.

11. The fabrication process of a semiconductor device as set forth in claim 10, wherein the step of forming an insulating film on the conductive layer further comprises the step of forming another insulating film over the protective film formed in the step of forming a protective film.

12. The fabrication process of a semiconductor device as set forth in claim 11, wherein, in the step of forming another insulating film, an oxide film is formed by a chemical vapor deposition method so as to cover the protective film.

13. The fabrication process of a semiconductor device as set forth in claim 12, wherein the oxide film

contains at least one of boron and phosphor.

14. The fabrication process of a semiconductor device as set forth in claim 10, wherein, in the step of forming a plurality of wires, the wires are formed by adjusting a minimum value S1 of wire distance of adjacent ones of the wires in a region where the protective film is bridged, and/or, in the step of forming a protective film, the protective film is formed by adjusting a length L1 of the bridged portion, so as to suppress scattering and spouting at a void formed by the bridging of the protective film.

15. The fabrication process of a semiconductor device as set forth in claim 14, wherein the minimum value S1 of wire distance and/or the length L1 of the bridged portion are adjusted so that the minimum value S1 is not less than  $1.8\mu\text{m}$ , and the length L1 is not more than  $900\mu\text{m}$ , or the minimum value S1 of wire distance and/or the length L1 of the bridged portion are adjusted so that the minimum value S1 is within a range of from not less than  $1.2\mu\text{m}$  to less than  $1.8\mu\text{m}$ , and the length L1 is not more than  $1400\mu\text{m}$ .

16. The fabrication process of a semiconductor

device as set forth in claim 15, wherein the minimum value S1 of wire distance and/or the length L1 of the bridged portion are adjusted so that the minimum value S1 is not less than  $1.8\mu\text{m}$ , or the length L1 of the bridged portion is not more than  $400\mu\text{m}$ .

17. The fabrication process of a semiconductor device as set forth in claim 14, wherein the minimum value S1 and/or the length L1 are adjusted in a region other than the region overlapping with the bonding pad.

18. The fabrication process of a semiconductor device as set forth in claim 10, wherein the step of forming a conductive layer on a substrate further comprises the steps of:

forming a semiconductor element on a semiconductor substrate;

forming a first wiring layer with a portion of the first wiring layer connected to the semiconductor element;

forming, on the first wiring layer, an interlayer insulating film with a via hole; and

forming a second wiring layer on the interlayer insulating film and in the via hole,

in the step of forming a bonding pad, the bonding pad being formed to overlap at least partially with the

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semiconductor element.